



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/665,286 | 09/22/2003 | Kiyotaka Sakai | 242257US2 | 5619 |
| 22850 | 7590 | 03/17/2005 | EXAMINER | |
| OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | | BRASE, SANDRA L |
| ART UNIT | | PAPER NUMBER | | |
| | | | | 2852 |

DATE MAILED: 03/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/665,286 | SAKAI ET AL. | |
| | Examiner | Art Unit | |
| | Sandra L. Brase | 2852 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on ____.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-51 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
 5) Claim(s) ____ is/are allowed.
 6) Claim(s) 1-6,8-19 and 21-51 is/are rejected.
 7) Claim(s) 7 and 20 is/are objected to.
 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948) Paper No(s)/Mail Date. _____.
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date 12/16/04; 9/17/04; 8/02/04; 7/8/04; 6/14/04; 5/24/04; 2/19/04; and 9/22/05 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

2. Claims 43-45 are objected to because of the following informalities: on line 1 of claim 43; on line 1 of claim 44 and on line 1 of claim 45, "the cooling means" should be changed to "a cooling means". Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4, 6, 8, 9, 12, 13, 19, 21, 32, 33, 35, 36, 38-41, 46, 47, 49 and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishio et al. (US 5,220,129).

5. Nishio et al. (...129) disclose an image forming apparatus comprising: an electrophotographic image forming process cartridge for use in an image forming apparatus, comprising: an image carrier (24) configured to carry an image; an exposing device (L)

configured to form a latent image on a surface of the image carrier; and a developer device (28) comprising: a developer carrier (28b) configured to carry and convey a developer; and a developer regulating member (46), comprising: a developer regulating part (46a) adapted to oppose a surface of the developer carrier (28b) adapted to regulate an amount of developer carried and conveyed by the developer carrier (figures 7 and 8), wherein the developer regulating member is formed from a metallic member and comprises a space facing an inner surface of the metallic member being adapted to extend in a direction perpendicular to a moving direction of the surface of the developer carrier (col. 9, lines 3-7; col. 11, lines 55-60; and figure 8). The developer is substantially continuous at a location adapted to be provided opposite to the surface of the developer carrier (figure 7). The metallic member comprises a single metallic plate member and at least the developer regulating part is formed by bending the metallic plate member (figure 8). The metallic member is a metallic plate member, wherein the developer regulating member is formed by bending the metallic plate member at a plurality of positions forming a plurality of bent parts, and the developer regulating part is constructed from an edge line portion of one bent part of the plurality of bent parts (col. 12, lines 1-2; and figure 8). The developer regulating part is spaced from the surface of the developer carrier by the thickness of the toner layer on the surface of the developer carrier (figure 8). The developer regulating member has a substantially polygonal cross section (figure 8).

6. Claims 1, 2, 4, 5, 8, 9, 12, 13, 18, 21, 32, 33, 35, 36, 38-41, 46, 47, 49 and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Mizuno et al. (US 4,920,916).

Art Unit: 2852

7. Mizuno et al. (...916) disclose an image forming apparatus comprising: an electrophotographic image forming process cartridge for use in an image forming apparatus, comprising: an image carrier (100) configured to carry an image; a latent image is formed on the image carrier (col. 6, line 68 – col. 7, line 2), thus it is inherent that there is an exposing device configured to form a latent image on a surface of the image carrier; and a developer device (K3) comprising: a developer carrier (10) configured to carry and convey a developer; and a developer regulating member (22), comprising: a developer regulating part (figure 13) adapted to oppose a surface of the developer carrier (10) adapted to regulate an amount of developer carried and conveyed by the developer carrier (figures 12 and 13), wherein the developer regulating member is formed from a metallic member and comprises a space facing an inner surface of the metallic member being adapted to extend in a direction perpendicular to a moving direction of the surface of the developer carrier (col. 10, lines 20-23; and figures 12 and 13). The developer is substantially continuous at a location adapted to be provided opposite to the surface of the developer carrier (figure 12). The metallic member comprises a single metallic plate member and at least the developer regulating part is formed by bending the metallic plate member (figure 13). The metallic member is a metallic plate member, wherein the developer regulating member is formed by bending the metallic plate member at a plurality of positions forming a plurality of bent parts, and the developer regulating part is constructed from a flat part formed between two bent parts of the plurality of bent parts (figure 13). The developer regulating part is spaced from the surface of the developer carrier by the thickness of the toner layer on the surface of the developer carrier (figures 12 and 13). The developer regulating member has a substantially polygonal cross section (figure 13).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 3, 10, 11, 14, 15, 17, 34, 37, 42, 43, 45, 48 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishio et al. (US 5,220,129) in view of Kakimoto (US 6,377,769).

11. Nishio et al. (...129) disclose the features mentioned previously, but do not disclose the claimed cooling device. Kakimoto (...769) discloses a cooling medium that contacts a portion of a developer regulating member and that cools the developer regulating member, where it is obvious that any portion of the developer regulating member can be contacted with the cooling medium (col. 4, lines 12-52). The cooling device is configured to supply a cooling gas around the developer regulating member by means of a fan (13) (col. 4, lines 24-52). The cooling

device comprises a bar-shaped heat transferring member (12) configured to transfer heat from the developer regulating member and disposed such that the heat transferring member runs through a space along a developer regulating member (figure 2), and a heat dissipating member configured to dissipate the heat from an end portion of the heat transferring member (col. 4, lines 12-52). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed cooling device, as disclosed by Kakimoto (...769), so as to cool the developer regulating member and thereby uniformize the temperature in the lengthwise direction thereof.

12. Claims 3, 10, 11, 14, 15, 17, 34, 37, 42, 43, 45, 48 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (US 4,920,916) in view of Kakimoto (US 6,377,769).

13. Nishio et al. (...916) disclose the features mentioned previously, but do not disclose the claimed cooling device. Kakimoto (...769) discloses a cooling medium that contacts a portion of a developer regulating member and that cools the developer regulating member, where it is obvious that any portion of the developer regulating member can be contacted with the cooling medium (col. 4, lines 12-52). The cooling device is configured to supply a cooling gas around the developer regulating member by means of a fan (13) (col. 4, lines 24-52). The cooling device comprises a bar-shaped heat transferring member (12) configured to transfer heat from the developer regulating member and disposed such that the heat transferring member runs through a space along a developer regulating member (figure 2), and a heat dissipating member configured to dissipate the heat from an end portion of the heat transferring member (col. 4, lines

Art Unit: 2852

12-52). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed cooling device, as disclosed by Kakimoto (...769), so as to cool the developer regulating member and thereby uniformize the temperature in the lengthwise direction thereof.

14. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishio et al. (US 5,220,129) in view of Kakimoto (US 6,377,769) as applied to claim10 above, and further in view of Yamashita et al. (US 6,577,836).

15. Nishio et al. (...129) in view of Kakimoto (...769) disclose the features mentioned previously, but do not disclose the claimed cooling liquid in the cooling device. Yamashita et al. (...836) disclose a cooling device including a cooling liquid in a heat pipe (col. 11, lines 11-17). It would have been obvious to one of ordinary skill in the art to include a cooling liquid, as disclosed by Yamashita et al. (...836), since such a liquid provides high speed heat transport.

16. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (US 4,920,916) in view of Kakimoto (US 6,377,769) as applied to claim10 above, and further in view of Yamashita et al. (US 6,577,836).

17. Mizuno et al. (...916) in view of Kakimoto (...769) disclose the features mentioned previously, but do not disclose the claimed cooling liquid in the cooling device. Yamashita et al. (...836) disclose a cooling device including a cooling liquid in a heat pipe (col. 11, lines 11-17). It would have been obvious to one of ordinary skill in the art to include a cooling liquid, as disclosed by Yamashita et al. (...836), since such a liquid provides high speed heat transport.

18. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishio et al. (US 5,220,129) in view of Ozawa (JP 2000-330381).

19. Nishio et al. (...129) disclose the features mentioned previously, and disclose the use of a two-component developer comprised of toner and carrier (col. 1, lines 35-39), but do not disclose the claimed size of the carrier. Ozawa (...381) discloses a developing device including a toner and a carrier, where the carrier has an average particle diameter of 10-60 μm (abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention for the carrier to have the claimed size, as disclosed by Ozawa (...381), since it is well known in the art to have such a size of carrier for use in an image developing device to develop images.

20. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (US 4,920,916) in view of Ozawa (JP 2000-330381).

21. Mizuno et al. (...916) disclose the features mentioned previously, but do not disclose the use of a two-component developer comprised of toner and carrier and the claimed size of the carrier. Ozawa (...381) discloses a developing device including a toner and a carrier, where the carrier has an average particle diameter of 10-60 μm (abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the developer include a toner and a carrier, and for the carrier to have the claimed size, as disclosed by Ozawa (...381), since it is well known in the art to have such a developer including a toner and carrier, and to have the claimed size of carrier for use in an image developing device to develop images.

Art Unit: 2852

22. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishio et al. (US 5,220,129) in view of Duggan et al. (US 6,083,652).

23. Nishio et al. (...129) disclose the features mentioned previously, and disclose the use of a two-component developer comprised of toner and carrier (col. 1, lines 35-39), but do not disclose the claimed composition of the carrier. Duggan et al. (...652) disclose a magnetic carrier including a core material and a coating layer covering the core material, and the coating layer contains a melamine resin crosslinked with a thermoplastic resin and a charge controlling agent (abstract; and col. 4, line 63 – col. 7, line 28). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed magnetic carrier composition, as disclosed by Duggan et al. (...652), since it is well known in the art to have such a carrier composition for a carrier for use in a developing device to develop an image.

24. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (US 4,920,916) in view of Duggan et al. (US 6,083,652).

25. Mizuno et al. (...916) disclose the features mentioned previously, but do not disclose the use of a two-component developer comprised of toner and carrier and the claimed composition of the carrier. Duggan et al. (...652) disclose a developer including a toner and a magnetic carrier (col. 13, lines 30-33), where the magnetic carrier including a core material and a coating layer covering the core material, and the coating layer contains a melamine resin crosslinked with a thermoplastic resin and a charge controlling agent (abstract; and col. 4, line 63 – col. 7, line 28). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed toner and magnetic carrier as the developer, and to have the claimed magnetic carrier

composition, as disclosed by Duggan et al. (...652), since it is well known in the art to have such a developer including a toner and a magnetic carrier and to have such a carrier composition for use as a developer for use in a developing device to develop an image.

26. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishio et al. (US 5,220,129) in view of Ayaki (JP 2002-207309).

27. Nishio et al. (...129) disclose the features mentioned previously, and disclose the use of a two-component developer comprised of toner and carrier (col. 1, lines 35-39), but do not disclose the claimed toner. Ayaki (...309) discloses a toner that has a ratio of a volume-based average particle diameter of the toner to a number-based average particle diameter of the toner is in the range of 1-1.2 (abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed toner, as disclosed by Ayaki (...309), since such a toner for use in a developing device is well known in the art for developing an image.

28. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (US 4,920,916) in view of Ayaki (JP 2002-207309).

29. Mizuno et al. (...916) disclose the features mentioned previously, but do not disclose the developer including a carrier and a toner, and the claimed toner. Ayaki (...309) discloses a developer including a toner and a carrier (abstract), and a toner that has a ratio of a volume-based average particle diameter of the toner to a number-based average particle diameter of the toner is in the range of 1-1.2 (abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed developer including a toner and a carrier and to

have the claimed toner, as disclosed by Ayaki (...309), since such a developer including a carrier and the claimed toner for use in a developing device is well known in the art for developing an image.

30. Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishio et al. (US 5,220,129) in view of Okado et al. (US 6,077,635).

31. Nishio et al. (...129) disclose the features mentioned previously, and disclose the use of a two-component developer comprised of toner and carrier (col. 1, lines 35-39), but do not disclose the claimed toner. Okado et al. (...635) disclose a developing device including a toner that has an average circularity of 0.92 – 0.995 (abstract; and col. 8, lines 32-44). A concentration of toner particles having a circularity less than 0.95 is in the range of 2-40% (abstract; and col. 8, lines 59-61). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed toner, as disclosed by Okado et al. (...635), since it is well known in the art to use such a toner in a developing device to develop images.

32. Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (US 4,920,916) in view of Okado et al. (US 6,077,635).

33. Mizuno et al. (...916) disclose the features mentioned previously, but do not disclose the use of a two-component developer comprised of toner and carrier, and the claimed toner. Okado et al. (...635) disclose a developing device including a toner and a carrier (abstract) and a toner that has an average circularity of 0.92 – 0.995 (abstract; and col. 8, lines 32-44). A concentration of toner particles having a circularity less than 0.95 is in the range of 2-40% (abstract; and col. 8,

lines 59-61). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed developer including a toner and a carrier, and the claimed toner, as disclosed by Okado et al. (...635), since it is well known in the art to use such a developer including a carrier and the claimed toner in a developing device for use in developing an image.

34. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishio et al. (US 5,220,129) in view of Yamashita et al. (US 6,787,280).

35. Nishio et al. (...129) disclose the features mentioned previously, and disclose the use of a two-component developer comprised of toner and carrier (col. 1, lines 35-39), but do not disclose the claimed toner composition. Yamashita et al. (...280) disclose a toner that is prepared by dispersing a mixture of toner constituents, including at least a prepolymer, a colorant and a release agent in an aqueous medium in the presence of a particulate resin to perform an addition polymerization reaction (col. 4, lines 51-65; col. 7, line 62 – col. 8, line 39; col. 13, lines 30-38; and col. 17, line 63 – col. 18, line 63). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed toner, as disclosed by Yamashita et al. (...280), since it is well known in the art to use such a toner in a developing device to develop images.

36. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (US 4,920,916) in view of Yamashita et al. (US 6,787,280).

37. Mizuno et al. (...916) disclose the features mentioned previously, but do not disclose the use of a two-component developer comprised of toner and carrier, and the claimed toner

composition. Yamashita et al. (...280) disclose a developer comprising a toner and a magnetic carrier (col. 1, lines 26-29), and a toner that is prepared by dispersing a mixture of toner constituents, including at least a prepolymer, a colorant and a release agent in an aqueous medium in the presence of a particulate resin to perform an addition polymerization reaction (col. 4, lines 51-65; col. 7, line 62 – col. 8, line 39; col. 13, lines 30-38; and col. 17, line 63 – col. 18, line 63). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed developer comprising a toner and a magnetic carrier and the claimed toner, as disclosed by Yamashita et al. (...280), since it is well known in the art to use such a developer including a carrier and the claimed toner for use in a developing device for use in developing an image.

38. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishio et al. (US 5,220,129) in view of Waki et al. (US 5,895,146).

39. Nishio et al. (...129) disclose the features mentioned previously, and disclose the use of a two-component developer comprised of toner and carrier (col. 1, lines 35-39), but do not disclose the claimed toner composition. Waki et al. (...146) disclose a toner having a shape factor SF-1 of 100-300 (col. 6, line 55 – col. 7, line 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed toner, as disclosed by Waki et al. (...146), since it is well known in the art to use such a toner in a developing device to develop images.

Art Unit: 2852

40. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (US 4,920,916) in view of Waki et al. (US 5,895,146).

41. Mizuno et al. (...916) disclose the features mentioned previously, but do not disclose the use of a two-component developer comprised of toner and carrier, and the claimed toner composition. Waki et al. (...146) disclose a developer comprising a toner and a magnetic carrier (col. 2, lines 51-54), and a toner having a shape factor SF-1 of 100-300 (col. 6, line 55 – col. 7, line 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed toner, as disclosed by Waki et al. (...146), since it is well known in the art to use such a developer including a carrier and the claimed toner for use in a developing device for use in a developing an image.

42. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishio et al. (US 5,220,129) in view of Duggan et al. (US 6,083,652) and Yamashita et al. (US 6,787,280).

43. Nishio et al. (...129) disclose the features mentioned previously, and disclose the use of a two-component developer comprised of toner and carrier (col. 1, lines 35-39), but do not disclose the claimed toner composition and the claimed carrier composition. Yamashita et al. (...280) disclose a toner that is prepared by dispersing a mixture of toner constituents, including at least a prepolymer, a colorant and a release agent in an aqueous medium in the presence of a particulate resin to perform an addition polymerization reaction (col. 4, lines 51-65; col. 7, line 62 – col. 8, line 39; col. 13, lines 30-38; and col. 17, line 63 – col. 18, line 63). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed toner, as disclosed by Yamashita et al. (...280), since it is well known in the art to use such a toner in a

developing device to develop images. Duggan et al. (...652) disclose a magnetic carrier including a core material and a coating layer covering the core material, and the coating layer contains a melamine resin crosslinked with a thermoplastic resin and a charge controlling agent (abstract; and col. 4, line 63 – col. 7, line 28). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed magnetic carrier composition, as disclosed by Duggan et al. (...652), since it is well known in the art to have such a carrier composition for a carrier for use in a developing device to develop an image.

44. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (US 4,920,916) in view of Duggan et al. (US 6,083,652) and Yamashita et al. (US 6,787,280).

45. Mizuno et al. (...916) disclose the features mentioned previously, but do not disclose the use of a two-component developer comprised of toner and carrier, the claimed toner composition and the claimed carrier composition. Yamashita et al. (...280) disclose a developer comprising a toner and a magnetic carrier (col. 1, lines 26-29), and disclose a toner that is prepared by dispersing a mixture of toner constituents, including at least a prepolymer, a colorant and a release agent in an aqueous medium in the presence of a particulate resin to perform an addition polymerization reaction (col. 4, lines 51-65; col. 7, line 62 – col. 8, line 39; col. 13, lines 30-38; and col. 17, line 63 – col. 18, line 63). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the developer comprising a toner and a magnetic carrier and the claimed toner, as disclosed by Yamashita et al. (...280), since it is well known in the art to use such a developer including a carrier and the claimed toner for use in a developing device for use in developing an image. Duggan et al. (...652) disclose a magnetic carrier including a

Art Unit: 2852

core material and a coating layer covering the core material, and the coating layer contains a melamine resin crosslinked with a thermoplastic resin and a charge controlling agent (abstract; and col. 4, line 63 – col. 7, line 28). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed magnetic carrier composition, as disclosed by Duggan et al. (...652), since it is well known in the art to have such a carrier composition for a carrier for use in a developing device to develop an image.

46. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishio et al. (US 5,220,129) in view of Kakimoto (US 6,377,769) and Yamashita et al. (US 6,577,836).

47. Nishio et al. (...129) disclose the features mentioned previously, but do not disclose the developing device including a cooling means, where the cooling means includes a cooling liquid. Kakimoto (...769) disclose a developing device including a cooling means, where the cooling means includes a heat pipe (12) in contact with a developer regulating member (col. 4, lines 12-52). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed cooling means, as disclosed by Kakimoto (...769), so as to cool the developer regulating member and thereby uniformize the temperature in the lengthwise direction thereof. Yamashita et al. (...836) disclose a cooling device including a cooling liquid in a heat pipe (col. 11, lines 11-17). It would have been obvious to one of ordinary skill in the art to include a cooling liquid, as disclosed by Yamashita et al. (...836), since such a liquid provides high speed heat transport.

48. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (US 4,920,916) in view of Kakimoto (US 6,377,769) and Yamashita et al. (US 6,577,836).

49. Mizuno et al. (...916) disclose the features mentioned previously, but do not disclose the developing device including a cooling means, where the cooling means includes a cooling liquid. Kakimoto (...769) disclose a developing device including a cooling means, where the cooling means includes a heat pipe (12) in contact with a developer regulating member (col. 4, lines 12-52). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed cooling means, as disclosed by Kakimoto (...769), so as to cool the developer regulating member and thereby uniformize the temperature in the lengthwise direction thereof. Yamashita et al. (...836) disclose a cooling device including a cooling liquid in a heat pipe (col. 11, lines 11-17). It would have been obvious to one of ordinary skill in the art to include a cooling liquid, as disclosed by Yamashita et al. (...836), since such a liquid provides high speed heat transport.

Allowable Subject Matter

50. Claims 7 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sandra L. Brase whose telephone number is 571-272-2131. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur T. Grimley, can be reached on 571-272-2136. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sandra L. Brase
Primary Examiner
Art Unit 2852

March 14, 2005